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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,253	08/09/2001	Martin Schmatz	CH919990008US1	1863

22150 7590 04/20/2006

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EXAMINER	
BELLO, AGUSTIN	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/682,253	SCHMATZ, MARTIN	
	Examiner	Art Unit	
	Agustin Bello	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda (U.S. Patent No. 4,786,891) in view of Trezza (U.S. Patent No. 6,788,895).

Regarding claims 1 and 15, Ueda teaches an optical detector (Figure 12) the electronically aligns to an optical fiber, the optical detector comprising: a photodetector device comprising an array of photo-sensors (reference numeral 21 in Figure 12); and a controller (reference numeral 31 in Figure 12) operatively connected to the photodetector device, to generate a detection signal by processing photo-sensor signals output from one or more photo-sensors in the array that are actuated by said optical signal, to thereby electronically align the optical fiber to the photodetector device (e.g. "pick up a signal from the sensor array" column 7 lines 13-17), (e.g. output of Adder 37 in Figure 12). Ueda differs from the claimed invention in that Ueda fails to specifically teach that the optical signals are transmitted via an optical fiber cable and further that any signals from photo-sensors that do not receive the optical signals are discounted, for automatically aligning the optical fiber to at least one of the photo sensors. However, Trezza teaches both of these limitations (Figure 3B and column 4 lines 32-47; column 5 line 57 – column 6 line 4). One skilled in the art would have been motivated to employ the

teachings of Trezza in the device of Ueda in order to use small amount of power (column 5 lines 66-67 of Trezza). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to transmit the optical signals via an optical fiber cable and further discount any signals from photo-sensors that do not receive the optical signals, for automatically aligning the optical fiber to at least one of the photo sensors.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Margolin (U.S. Patent No. 4,762,391) in view of Trezza (U.S. Patent No. 6,788,895) and Curbelo (U.S. Patent No. 5,262,635).

Regarding claim 14, Margolin teaches an optical communication system comprising an optical fiber for transmitting an optical signal (reference numeral 15 in Figure 1) and an optical detector (reference numeral 141 in Figure 1) disposed to face an end of the optical fiber, wherein the optical detector electronically aligns to the optical fibre, wherein said optical detector comprising : an array of photo-sensors (reference numeral 20 in Figure 2) which receives an optical signal output from the end of the optical fiber, and a controller (reference numeral 26 in Figure 2) operatively connected to the photodetector device, to generate a detection signal by processing photosensor signals output from one or more photo-sensors in the array that are actuated by said optical signal, while discounting photosensors in the array that are not actuated by said optical signal, to thereby electronically align the optical fiber to the photodetector device, (column 4 lines 60-64, column 3 lines 62-63, column 4 lines 56 - column 5 lines 3).

Margolin differs from the claimed invention in that Margolin fails to specifically teach that the optical that any signals from photo-sensors that do not receive the optical signals are discounted. However, Trezza teaches these limitations (Figure 3B and column 4 lines 32-47;

column 5 line 57 – column 6 line 4). One skilled in the art would have been motivated to employ the teachings of Trezza in the device of Margolin in order to use small amount of power (column 5 lines 66-67 of Trezza). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to transmit the optical signals via an optical fiber cable and further discount any signals from photo-sensors that do not receive the optical signals, for automatically aligning the optical fiber to at least one of the photo sensors.

Margolin further differs from the claimed invention in that Margolin fails to specifically teach that the controller comprises DC extraction circuitry for extracting a DC component from the output of each photo-sensor in the array; AC extraction circuitry for extracting an AC component from the output of each photo-sensor in the array, and, that the multiplier circuitry is coupled to the DC extraction circuitry and to the AC extraction circuitry for generating a separate multiplier output based on the AC component and the DC component of the output of each photo-sensor in the array. However, Curbelo, in the same field of photodetection, teaches it is well known in the art to include, as part of the controller circuitry of an optical detector, DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) for extracting a DC component from the output of a photo-sensor (column 11 lines 38-41); AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for extracting an AC component from the output of a photo-sensor (e.g. "AC signal" of column 11 lines 38-41), and, multiplier circuitry (reference numeral 120 in Figure 7) coupled to the DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) and to the AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for generating a separate multiplier output (e.g. output of multiplier 120 in Figure 7) based on the AC component and the DC component of the output of a photo-sensor

(reference numeral 10 in Figure 7). One skilled in the art would have been motivated to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier in the controller of Margolin in order to perform non-linearity correction for each photo-sensor of the array of Margolin without increasing the noise level in the detector signal, a benefit recognized by Curbelo (column 2 lines 46-52). Furthermore, one skilled in the art could have expected a reasonable degree of success in including the AC and DC extraction circuitry between each photo-sensor and multiplier in the controller of Margolin since Curbelo similarly teaches that the AC and DC extraction circuitry reside between a photo-sensor and multiplier. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier of Margolin in order to generate a separate multiplier output based on the AC component and the DC component of the output of a photo-sensor, thereby correcting for non-linearity in each photo-sensor of the array of Margolin without increasing the noise level in the detector signal.

4. Claims 2-10, 12-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda in view of Trezza and Curbelo (U.S. Patent No. 5,262,635).

Regarding claim 2 and 16, Ueda teaches an optical detector as claimed in claim 1 as well as a controller comprising multiplier circuitry (reference numeral 35 in Figure 12) for generating a separate multiplier output based on the output of each photo-sensor in the array (column 7 lines 7-9), but differs from the claimed invention in that Ueda fails to specifically teach that the controller comprises DC extraction circuitry for extracting a DC component from the output of each photo-sensor in the array; AC extraction circuitry for extracting an AC component from the output of each photo-sensor in the array, and, that the multiplier circuitry is coupled to the DC

extraction circuitry and to the AC extraction circuitry for generating a separate multiplier output based on the AC component and the DC component of the output of each photo-sensor in the array. However, Curbelo, in the same field of photodetection, teaches it is well known in the art to include, as part of the controller circuitry of an optical detector, DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) for extracting a DC component from the output of a photo-sensor (column 11 lines 38-41); AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for extracting an AC component from the output of a photo-sensor (e.g. "AC signal" of column 11 lines 38-41), and, multiplier circuitry (reference numeral 120 in Figure 7) coupled to the DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) and to the AC extraction circuitry (capacitor and reference numeral 110 in Figure 7) for generating a separate multiplier output (e.g. output of multiplier 120 in Figure 7) based on the AC component and the DC component of the output of a photo-sensor (reference numeral 10 in Figure 7). One skilled in the art would have been motivated to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier in the controller of Ueda in order to perform non-linearity correction for each photo-sensor of the array of Ueda without increasing the noise level in the detector signal, a benefit recognized by Curbelo (column 2 lines 46-52). Furthermore, one skilled in the art could have expected a reasonable degree of success in including the AC and DC extraction circuitry between each photo-sensor and multiplier in the controller of Ueda since Curbelo similarly teaches that the AC and DC extraction circuitry reside between a photo-sensor and multiplier. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the AC and DC extraction circuitry of Curbelo between each photo-sensor and multiplier of Ueda in order to generate a separate

multiplier output based on the AC component and the DC component of the output of a photo-sensor, thereby correcting for non-linearity in each photo-sensor of the array of Ueda without increasing the noise level in the detector signal.

Regarding claims 3 and 17, one skilled in the art would clearly have recognized that in combining the teachings of Ueda with the teachings of Curbelo as discussed above, each multiplier output (e.g. output of Multipliers 35 in Figure 12 of Ueda) would be based on the product (e.g. the outcome of multiplication) of the AC component and the DC component of the output of the corresponding photo-sensor.

Regarding claims 4 and 18, Ueda teaches that the controller comprises summation circuitry (reference numeral 37 in Figure 12) coupled to the multiplier circuitry (reference numeral 35 in Figure 12) for combining the multiplier outputs to generate the received signal (e.g. output of Adder 37 in Figure 12).

Regarding claim 5, one skilled in the art would clearly have recognized that in combining the teachings of Ueda with the teachings of Curbelo as discussed above, the DC extraction circuitry would comprise a plurality of DC extraction circuits each corresponding to a different one of the photo-sensors of Ueda (reference numeral 21 in Figure 12) and the AC extraction circuitry would comprise a plurality of AC extraction circuits each corresponding to a different one of the photo-sensors in that the combination of references would result in AC and DC extraction circuitry between each photo-sensor and multiplier of Ueda. One skilled in the art would clearly have recognized that such an implementation of the combination of references would allow for the correction of non-linearity in each photo-sensor of the array of Ueda via the

plurality of AC and DC extraction circuitry without increasing the noise level in the detector signal.

Regarding claim 6, the combination of Ueda, Trezza, and Curbelo as discussed above teaches that each DC extraction circuit comprising a DC current sensor (reference numeral 115 in Figure 7 of Curbelo) coupled to the corresponding photo-sensor (reference numeral 21 in Figure 12 of Ueda).

Regarding claim 7, the combination of Ueda, Trezza, and Curbelo as discussed above teaches that each AC extraction circuit comprises a transimpedance amplifier (reference numeral 110 in Figure 7 of Curbelo) coupled to the corresponding photo-sensor (reference numeral 21 in Figure 12 of Ueda).

Regarding claim 8, Ueda teaches that the multiplier circuitry comprises a plurality of multiplier circuits (plural reference numeral 35 in Figure 12) each corresponding to a different one of the photo-sensors (reference numeral 21 in Figure 12).

Regarding claim 9, the combination of references and Curbelo in particular teaches that the DC extraction circuitry (reference numerals 115, 117, 118 in Figure 7) comprises circuitry (reference numeral 115 in Figure 7) for extracting the DC component based on the AC signal strength of the output of each photo-sensor in the array (e.g. DC extraction circuitry provides a DC component by taking into account the strength of both the AC and DC output of each photo-sensor in the array column 11 lines 31-34, 41-44).

Regarding claim 10, Ueda teaches the multiplier circuitry comprises a switch (column 7 lines 13-14).

Regarding claim 12, Ueda teaches that each photo-sensor in the array comprises a photo-diode (column 2 lines 29-32), which inherently include an anode and cathode.

Regarding claim 13, Ueda teaches that the array of photo- sensors comprises a two dimensional array of photo-sensors (e.g. 1x3 or 1x5 array of column 2 lines 33-34).

Regarding claim 19-22, the manner in which one skilled in the art connects the AC/DC extraction circuit to a photo diode is a matter of design choice and does not present patentable subject matter. Clearly, one skilled in the art posses the ability to connect the AC/DC extraction circuit to either the anode or the cathode of the AC/DC extraction circuit.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda in view of Trezza, and Curbelo as applied to claims 2 and 10 above, and further in view of Gariboldi (U.S. Patent No. 5,747,978).

Regarding claim 11, the combination of Ueda, Trezza, and Curbelo differs from the claimed invention in that it fails to specifically teach that the switch has a hysteresis. However, providing hysteresis for switches is well known in the art. Gariboldi teaches it is well known in the art to provide a hysteresis for a switch in order to prevent intermittent oscillations at the output of circuit (column 5 lines 46-52) due to switch bounce. One skilled in the art would have been motivated to provide hysteresis for the switch of the combination of references and Ueda in particular in order to speed up switching and to prevent intermittent oscillations at the output of circuit, both benefits noted by Gariboldi (column 5 lines 46-52). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide the switch of the combination of references with hysteresis as taught by Gariboldi.

Response to Arguments

6. Applicant's arguments filed 2/3/06 have been fully considered but they are not persuasive. The examiner maintains that the cited references teach the limitations of the claimed invention.

7. Applicant's arguments filed 9/1/05 have been fully considered but they are not persuasive. The applicant argues that the combination of references and Trezza in particular fails to specifically teach an array of photo-sensors. However, the opposite is true (reference numeral 22 in Figure 3B). Furthermore, Ueda clearly teaches this limitation. It appears that the applicant is implying that each detector on the board comprises an array onto itself. However, this feature is not claimed. As such the examiner maintains that Trezza teaches an array of photo-sensors.

Next, the applicant argues that Margolin does not operate to generate a detection signal by processing photo-sensor signals output from one or more photo-sensors in the array that are actuated by said optical signal, while discounting photo-sensors in the array that are not actuated by said optical signal to thereby electronically align the optical fiber to the photo-detector device, as claimed in claim 14. However, the examiner believes the opposite to be true (column 4 lines 60-64), (column 3 lines 62-63, column 4 lines 56 - column 5 lines 3).

Regarding the applicant's argument against the rejection of claims 19-22, the examiner has relied on the connection of the circuits as being a matter of design choice that would have been well within the capabilities of one skilled in the art, and therefore obvious to one skilled in the art at the time the invention was made.

8. In response to applicant's argument that Ueda and Margolin is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not,

then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Ueda and Margolin are in the field of applicant's endeavor, namely optical communication systems.

9. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

10. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the examiner has provided a clear motivation cited by Curbelo in making the combination of Margolin and Curbelo (column 2 lines 46-52).

11. In response to applicant's argument that the cited references do not operate to generate a detection signal by processing photo-sensor signals output from one or more photo-sensors in the array that are actuated by said optical signal, while discounting photo-sensors in the array that are not actuated by said optical signal to thereby electronically align the optical fiber to the photo-detector device, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably

distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AB

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PRIMARY EXAMINER